

Application No. 10/518,886
Docket No. 2002B096/2
Amdt. dated April 3, 2006
Reply to Office Action of December 1, 2005

IN THE CLAIMS:

Please cancel claim 8 and amend the claims as follows:

1. (Currently amended) A composition suitable for an air barrier comprising:
an elastomer comprising C₄ to C₇ isoolefin derived units;
a processing oil; and
a plastomer, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α-olefin derived units, ~~the plastomer having and has a density of less than 0.915 g/cm³; wherein naphthenic and aromatic oils are substantially absent from the composition.~~
2. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of C₃ to C₁₀ α-olefin derived units.
3. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of units selected from 1-butene, 1-hexene and 1-octene derived units.
4. (Original) The composition of Claim 1, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of octene derived units.
5. (Currently amended) The composition of Claim 1, wherein the plastomer has a melt index of from 0.1 to 10 dg/min as measured by ASTM D 1238 at 190°C and 2.1 kg.
6. (Original) The composition of Claim 1, wherein the plastomer is present in the composition from 2 to 20 phr.
7. (Original) The composition of Claim 1, wherein the plastomer is present in the composition from 10 to 15 phr.
8. (Canceled)

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9. (Currently amended) The composition of Claim [[8]] 1, wherein the processing oil is selected from paraffinic oils, [[and]] polybutene processing oils, and mixtures thereof.
10. (Currently amended) The composition of Claim [[8]] 1, wherein the processing oil is present from 2 to 20 phr.
11. (Original) The composition of Claim 1, also comprising a filler selected from carbon black, modified carbon black, silicates, clay, exfoliated clay, and mixtures thereof.
12. (Currently amended) The composition of Claim 1, the composition also further comprising one or more components a ~~secondary rubber~~ selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene), and mixtures thereof.
13. (Currently amended) The composition of Claim [[12]] 1, further comprising ~~wherein the secondary rubber is present from 5 to 30 phr of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene), and mixtures thereof.~~
14. (Original) The composition of Claim 1, wherein the C₄ to C₇ isoolefin derived units are selected from isobutylene, isobutene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene, 1-butene, 2-butene, methyl vinyl ether, indene, vinyltrimethylsilane, hexene, and 4-methyl-1-pentene.

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15. (Original) The composition of Claim 1, wherein the elastomer also comprises multiolefin derived units selected from isoprene, butadiene, 2,3-dimethyl-1,3-butadiene, myrcene, 6,6-dimethyl-fulvene, hexadiene, cyclopentadiene, and piperylene.
16. (Original) The composition of Claim 1, wherein the elastomer also comprises styrenic derived units selected from styrene, chlorostyrene, methoxystyrene, indene and indene derivatives, *α*-methylstyrene, *o*-methylstyrene, *m*-methylstyrene, and *p*-methylstyrene, and *p*-tert-butylstyrene.
17. (Original) The composition of Claim 1, wherein the elastomer is halogenated.
18. (Original) The composition of Claim 1, also comprising a curative selected from sulfur, sulfur-based compounds, metal oxides, metal oxide complexes, fatty acids, peroxides, diamines, and mixtures thereof.
19. (Original) The composition of Claim 1, wherein the composition has a brittleness value of less than -41.0°C.
20. (Currently amended) The composition of Claim 1, wherein the composition has a Shore A Hardness at 25°C [[is]] of less than 55.
21. (Currently amended) The composition of Claim 1, wherein the composition has an air permeability at 65°C [[is]] of less than $3.50 \times 10^{-8} \text{ cm}^3 \cdot \text{cm}/\text{cm}^2 \cdot \text{sec} \cdot \text{atm}$.
22. (Currently amended) The composition of Claim 1, wherein the composition has an Adhesion to Carcass value [[is]] of greater than 4 N/mm.
23. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves made from the composition of Claim 1.

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24. (Currently amended) A composition suitable for an air barrier comprising:
polybutene processing oil;
an elastomer comprising C₄ to C₇ isoolefin derived units; and
a plastomer, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α-olefin derived units, the plastomer having and has a density of less than 0.915 g/cm³.

25. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of C₃ to C₁₀ α-olefin derived units.

26. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of units selected from 1-butene, 1-hexene and 1-octene derived units.

27. (Original) The composition of Claim 24, wherein the plastomer comprises ethylene derived units and from 10 wt% to 30 wt% of octene derived units.

28. (Currently amended) The composition of Claim 24, wherein the plastomer has a melt index of from 0.1 to 10 dg/min as measured by ASTM D 1238 at 190°C and 2.1 kg.

29. (Original) The composition of Claim 24, wherein the plastomer is present in the composition from 2 to 20 phr.

30. (Original) The composition of Claim 24, wherein the plastomer is present in the composition from 3 to 10 phr.

31. (Original) The composition of Claim 24, wherein the polybutene processing oil has a number average molecular weight of from 900 to 8000.

32. (Original) The composition of Claim 24, wherein the polybutene processing oil is present from 2 to 20 phr.

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33. (Original) The composition of Claim 24, also comprising a filler selected from carbon black, modified carbon black, silicates, clay, exfoliated clay, and mixtures thereof.

34. (Currently amended) The composition of Claim 24, wherein paraffinic, naphthenic and aromatic oils are substantially absent from the composition.

35. (Currently amended) The composition of Claim 24, the composition also further comprising one or more components a secondary rubber selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene), and mixtures thereof.

36. (Currently amended) The composition of Claim [[35]] 24, further comprising wherein the secondary rubber is present from 5 to 50 phr of one or more components selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene), and mixtures thereof.

37. (Original) The composition of Claim 24, wherein the C₄ to C₇ isoolefin derived units are selected from isobutylene, isobutene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene, 1-butene, 2-butene, methyl vinyl ether, indene, vinyltrimethylsilane, hexene, and 4-methyl-1-pentene.

38. (Original) The composition of Claim 24, wherein the elastomer also comprises multiolfin derived units selected from isoprene, butadiene, 2,3-dimethyl-1,3-butadiene, myrcene, 6,6-dimethyl-fulvene, hexadiene, cyclopentadiene, and piperylene.

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39. (Original) The composition of Claim 24, wherein the elastomer also comprises styrenic derived units selected from styrene, chlorostyrene, methoxystyrene, indene and indene derivatives, *α*-methylstyrene, *o*-methylstyrene, *m*-methylstyrene, and *p*-methylstyrene, and *p*-tert-butylstyrene.
40. (Original) The composition of Claim 24, wherein the elastomer is halogenated.
41. (Original) The composition of Claim 24, also comprising a curative selected from sulfur, sulfur-based compounds, metal oxides, metal oxide complexes, fatty acids, peroxides, diamines, and mixtures thereof.
42. (Original) The composition of Claim 24, wherein the composition has a brittleness value of less than -41.0 °C.
43. (Currently amended) The composition of Claim 24, wherein the composition has a Shore A Hardness at 25°C [[is]] of less than 50.
44. (Currently amended) The composition of Claim 24, wherein the composition has a aged Shore A Hardness at 25°C [[is]] of less than 55.
45. (Currently amended) The composition of Claim 24, wherein the composition has an air permeability at 65°C [[is]] of less than $3.50 \times 10^{-8} \text{ cm}^3 \cdot \text{cm}/\text{cm}^2 \cdot \text{sec-atm}$.
46. (Currently amended) The composition of Claim 24, wherein the composition has an Adhesion to Carcass value [[is]] of greater than 4 N/mm.
47. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves made from the composition of Claim 24.
48. (Currently amended) A composition suitable for an air barrier comprising

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from 5 to 25 phr polybutene processing oil;
halogenated star-branched butyl rubber;
from 5 to 25 phr natural rubber; and
from 5 to 25 phr of a plastomer, wherein the plastomer is a copolymer of ethylene derived units and C₃ to C₁₀ α-olefin derived units, the plastomer having and has a density of less than 0.915 g/cm³; and wherein the composition having has a Brittleness value of less than [[]] 41.0°C.

49. (Original) The composition of Claim 48, wherein the polybutene processing oil has a number average molecular weight of from 900 to 3000.
50. (Original) An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves made from the composition of Claim 48.